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LANTERNFLIES OF THE FAMILY ISSIDAE OF THE LESSER
ANTILLES (HOMOPTERA: FULGOROIDEA)

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This report is concerned primarily with the family Issidae as represented in the Lesser Antilles, but opportunity has been taken to comment on a few species of interest from other parts of the Caribbean area. The material on which this study has been based, with only one or two exceptions, was collected by the writer. Holotype and allotype specimens of new species described have been deposited in the U. S. National Museum.

The writer's thanks are tendered to the authorities of the U. S. National Museum and, in particular, to Dr. D. A. Young, of the U. S. Department of Agriculture, for providing facilities for study and assistance whenever it was needed. This work was carried out during the tenure of a fellowship awarded by the John Simon Guggenheim Memorial Foundation.

History and zoogeography

The first member of the group to be recorded from the Lesser Antilles was *Acanalonia viriditerminata*,² which Lethierry described in 1881

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²The writer has stated his reasons elsewhere for placing *Acanalonia* in the family Issidae (*Trans. Ent. Soc. London*, vol. 105, pt. 19, p. 471, 1954).

when studying the collections of Delauney from the French West Indies and referred to the flatid genus *Carthaea* Stål. Thirteen years later Uhler described the new species *musca* from St. Vincent and erected the genus *Cheiloceps* for its reception. According to the existing characterization of *Thionia* Stål, *Cheiloceps* must be placed in synonymy, but its original species and other West Indian species, described below, differ strikingly from typical *Thionia* (e. g., *T. longipennis* Spinola) in the structure of the ovipositor as well as in bodily proportions. There is a little evidence, derived partly from examination of a few undescribed *Thionia* from Central America and partly from comparison of the shape of the ovipositor in various species of the genus *Colpoptera*, that with sufficient material it will prove possible to find a series of intergrading forms. Nevertheless, the West Indian species form a distinct and natural group within the genus, and the name *Cheiloceps* may usefully be preserved at subgeneric level for this group.

These are the only Lesser Antillean issids described, but recently material of a small *Acanalonia* from Antigua, B. W. I., has been referred by Caldwell (*in* Caldwell and Martorell, Puerto Rico Univ. Journ. Agr., 1950, vol. 34, No. 2, p. 268, 1951) to a species described from the Greater Antilles. Apart from this particular disposition, it is relevant to refer to the study of Puerto Rican Issidae in the paper cited, as the data there presented shed much light on the source from which the Lesser Antillean Issidae have been derived.

It appears to be generally true that wherever related faunas can be closely compared, members of the Issidae are among the foremost of those forms which exhibit the greatest degree of morphological difference, and are sensitive indicators of degree of population divergence. In the Lesser Antillean species the differences are most obvious, and sometimes only appreciable, in the genitalia of the male.

One species, *Colpoptera maculifrons* Muir, is clearly polytypic. Two of the processes of the male genitalia vary in their relative lengths to an unusually large extent even within populations from a single locality, and this degree of variation is not appreciably exceeded by that between populations from two or more different localities, even on different islands. Interisland differences, however, which are constant within any one population, appear in the shape of the distal part of the tegmina and in coloration, and it is these, rather than genitalic structure, that provide reliable characters for the recognition of any subspecies.

Of the other Lesser Antillean members of the genus *Colpoptera*, one, described below as new, is very close to *C. nemonticolens* Caldwell. The genitalic differences in both sexes are sufficiently large to make it

necessary to recognize two species, but there can be little doubt that both have descended from a common Greater Antillean progenitor.

In *Cheiloceps* there is little to indicate which Greater Antillean species should be considered nearest, but the choice perhaps lies between *Thionia ramosi* Caldwell and *T. borinquensis* Dozier although the coloration suggests affinity with *Thionia ustulipunctata* Uhler, new combination, and *T. argo* Fennah. The position is clearer in *Acanalonia*, where the relationship between *Acanalonia viriditerminata* (Lethierry) and the Puerto Rican *agilis* Melichar is extremely close, while, as already mentioned, *A. viequensis* Caldwell has been reported both from Vieques Island and from Antigua, B. W. I. It is possible that this species has been derived from the same stock that gave rise to *A. plana* Van Duzee in Jamaica. In view of the close relationship between the Puerto Rican and Lesser Antillean issid faunas it is surprising that no counterpart of the *servillei*-like forms of the Lesser Antilles has been reported from Puerto Rico. The corresponding form which is geographically nearest is *A. robusta* Walker from Jamaica. In Trinidad, to the south, there are two species of *Acanalonia* of generally similar appearance to the insular forms just mentioned. But the differences between either of these and any Antillean species are very pronounced in points of detail, and it is evident that no such close relationship exists as that between the Lesser Antillean and Jamaican species. A similar observation may be made with regard to *Thionia*, but no definite judgment can be formed about *Colpoptera*, as only a single species, as yet undescribed, is known in Trinidad.

Key to genera of Lesser Antillean Issidae

- 1. Mesonotal disc twice as long as broad or longer; posttibiae laterally unarmed; vertex conically produced or not separated from frons by a carina; tegmina held subvertically in repose **Acanalonia** Spinola
- Mesonotal disc less than 1.5 times as long as broad; posttibiae almost invariably armed with one or two spines; vertex not conically produced, always separated from frons by a carina; tegmina for most of length rounded-tectiform in repose 2
- 2. Form broadly ovate; wings very large with margin strongly indented twice and anal lobe larger than anterior lobe; posttibiae laterally bispinose.

Thionia Stål

Form narrow and elongate; wings not exceptionally large, with margin very feebly indented and anal lobe much smaller than anterior lobe; posttibiae laterally with a single spine, occasionally unarmed . **Colpoptera** Burmeister

Genus Colpoptera Burmeister

Colpoptera Burmeister, Handbuch der Entomologie, vol. 2, p. 155, 1835. (Logotype, *Colpoptera sinuata* Burmeister, loc. cit., designated by Melichar, in Wytzman, Genera Insectorum . . ., fasc. 182, p. 92, 1923.)
Neocolpoptera Dozier, Amer. Mus. Nov., vol. 510, p. 22. (Type species, *Neocolpoptera portoricensis* Dozier, loc. cit., original designation.)

Colpoptera memnonia, new species

FIGURE 2, a-i

Testaceous-fuscous; frons laterally, genae anteriorly, and sides of clypeus pallid stramineous, sides of vertex, anterior and posterior margin of pronotum, disc of mesonotum, a sinuate suffusion between disc and tegulae, and metathoracic pleurites fuscous-piceous. Tegmina hyaline at base and between R and costal margin, remainder of corium and clavus fuscous-piceous as far as nodal line, membrane, except anterior to R, brown. Wings hyaline, suffused with brown in distal half.

Anal segment of male with anal foramen situated about one-third from base, in lateral view strongly deflexed distad of anal foramen, with upper margin concave and lower sinuate, lateroapical angles broadly triangularly produced ventrad, apical margin convex. Aedeagus broadly tubular, shallowly curved upward distally, armed ventrolaterally on left about one-fifth from apex with a moderately short stout spine directed cephalad and slightly curved dorsad at apex; a corresponding spine on right side of same shape but distinctly longer; a pair of broadly Y-shaped processes arising near the base of these spines, directed dorsad and closely investing aedeagus. Genital styles subovate, dorsal margin in its basal half strongly bent laterad, dorsal process in anterior view with a stout decurved spine on outer side near base, thence shallowly tapering distad to rounded apex, in lateral view bent cephalad in apical third.

Anal segment of female in profile very narrow and almost straight distad of anal foramen. Pregenital sternite only moderately produced ventrocaudad distally, its hind margin in anteroventral view broadly truncate-convex, very much thickened, and devoid of any eminence on dorsal surface.

Male, length 6.0 mm., tegmen 6.9 mm. Female, length 7.0 mm., tegmen 6.9 mm.

Specimens examined: 1 male (holotype, USNM 62014) and 1 female (allotype), 1,000 ft. in mountain forest, Dominica, B. W. I., July 6, 1939, Fennah. This species is near to *Colpoptera monticolens* Dozier, new combination, and *Colpoptera nemonticolens* Caldwell, new combination. It differs from them in the shape of the male anal segment, in the shape and length of the aedeagal processes, in the shape of the dorsal margin of the genital styles, and in the coloration of the frons.

Colpoptera cyatheae, new species

FIGURE 3, n-r

Vertex broader across apex than long in middle line (2.7:1), frons in middle line as long as broad.

Yellowish testaceous; disc of mesonotum, abdominal tergites, and genitalia testaceous to fuscous-piceous. Tegmina yellowish brown between Sc and costal margin, and along commissural margin of clavus, remainder of corium dark fuscous, almost piceous, membrane wholly brown. Wings more or less suffused with brown.

Anal segment of male with anal foramen situated about one-third from base, in lateral view roundly decurved, then directed approximately caudad, lower lateral margins angulately produced ventrad, apical margin deeply convex. Aedeagus tubular, slightly curved upward distally, a pair of slender spinose processes arising laterally near apex, directed cephalad above aedeagus; a second pair of spinose processes arising ventrolaterally near apex, elongate, directed cephalad and lying close against ventral surface of aedeagus almost to its base. Genital styles subovate, process on dorsal margin almost vertical, tapering dorsad and abruptly bent laterad at right angles at apex and expanded in a horizontal wedge-shaped lobe.

Anal segment of female in profile moderately broad and distinctly curved distad of anal foramen. Pregenital sternite strongly produced ventrocaudad, broadly convex in anteroventral view, a bluntly conical eminence medially on dorsal surface a little distance from margin.

Male, length 5.1 mm., tegmen 6.0 mm. Female, length 5.8 mm., tegmen 6.6 mm.

Specimens examined: 4 males (one the holotype, USNM 62018), 2 females (one the allotype), and a nymph taken on *Cyathea* sp. and other vegetation in mountain forest, Quillesse, St. Lucia, Feb. 21, 1941, Fennah. This species is quite distinct from any so far described. It differs from all in the shape of the male genitalia, from *Colpoptera portoricensis* Dozier, new combination, in its smaller size, and from *Colpoptera rara* Caldwell, new combination, *C. monticolens* Dozier, and *C. nemonticolens* Caldwell in the shape of the hind margin of the pregenital sternite of the female.

Colpoptera meleagris, new species

FIGURE 1, *p-v*

Testaceous; disc of frons except for a spot on each side at level of antennae and some small spots on lateral margins and disc of clypeus except near base reddish brown; a few spots on pronotum behind eyes, mesonotum, and protibiae and mesotibiae anteriorly yellowish brown; abdomen brown, posterior margin pallid. Tegmina hyaline, tinged pale yellow, sometimes with a broad sinuate vitta from costa at base to humeral eminence, then obliquely to claval suture, thence broaden-

ing into membrane and reaching apical margin between R and M. Wings more or less infusate.

Anal segment of male not very long, anal foramen situated at middle, in profile anal segment weakly declivous distad, lower lateral margin rectangulately produced ventrad at middle; in dorsal view anal segment slightly tapering distad of anal foramen, apical margin deeply convex. Pygofer with dorsolateral angles prominent, lateral margins shallowly concave. Aedeagus curved upward distad, a spinose process, in the form of an inverted Y, on each side near apex, closely adpressed to aedeagus; a pair of long spinose processes arising ventrally and slightly subapically, directed cephalad below aedeagus, sinuate in their basal half. Genital styles subovate, in side view with ventral margin shallowly convex, dorsal margin straight, strongly ascending to process, thence deeply concave to apical margin, which is convex; dorsal process bent laterad at apex in a small horizontal subtriangular plate.

Anal segment of female very long and narrow, evenly decurved throughout, anal foramen situated a little basad of middle. Ovipositor with valvulae long, narrow, and decurved, tapering distally to acuminate tip.

Pregenital sternite markedly produced ventrocaudad, in anteroventral view deeply convex, not twice as broad across base as long in middle line.

Male, length 5.5 mm., tegmen, 5.0 mm. Female, length 4.0 mm., tegmen 5.6 mm.

Specimens examined: 13 males (one the holotype, USNM 62017), 3 females (one the allotype), and 1 nymph, 1,200 ft., Ridgefield, Dominica, B. W. I., June 18, 1940, Fennah. This species would appear to be nearest to *Colpoptera fusca* Caldwell in the shape of the aedeagus, but the two are not closely similar even in this structure, and they differ in the relative length of the ventral spines. More obvious differences are to be found in the shape of the anal segment of the male, of the pregenital sternite of the female, and in bodily coloration.

This species, which inhabits high montane forest, differs profoundly from all species of *Colpoptera* so far described in the shape of the female genitalia, which may be compared with those of *Syrgis* and *Tempsa* from the Orient, or with those of species assigned to the subgenus *Cheiloceps* or *Thionia* (see p. 24).

Colpoptera lucaris, new species

FIGURE 2,m,n

Closely similar in size and form to *C. meleagris*, new species.

Light testaceous; clypeus and a broad even band along middle of frons slightly but distinctly darker, abdominal sclerites yellowish

brown, genitalia fuscous. Tegmina hyaline, tinged dull yellow, veinlets in middle area of membrane diffusely overlaid with fuscous; sometimes corium anterior to Cu_1 infuscate from basal third to nodal line. Wings lightly and uniformly suffused brown except at apex of Cu_2 .

Anal segment of male long, distally narrow; anal foramen situated about one-third from base; anal segment in profile evenly decurved throughout, lower margin concave, not at all produced ventrad at level of anal segment. Aedeagus tubular, curved upward distally, a pair of long spinose processes arising ventrally near apex, directed cephalad and lying close against aedeagus, shallowly sinuate in basal half and curved upward distally; a pair of shorter spinose processes arising laterally near apex, shallowly sinuate, directed ventrocephalad. Genital styles broadening distad, ventral margin very shallowly convex, dorsal margin straight, ascending from base to process, declivous distad of it, apical margin convex, dorsal process broad, tapering distad, thickened on anterior face, narrow on margin, abruptly bent laterocaudad at apex in a small subhorizontal lobe.

Female with genitalia similar to those of *C. meleagris*, new species.

Male, length 5.4 mm., tegmen 5.1 mm. Female, length 4.2 mm., tegmen 5.5 mm.

Specimens examined: 1 male (holotype, USNM 62015) and 1 female (allotype) in mountain forest, Dominica, B. W. I., June 11 to July 8, 1939, Fennah. The female specimen is not so definitely marked as the male, but the two are associated by the presence of the vertical band down the middle of the frons.

The occurrence of this species virtually side by side with *C. meleagris* is remarkable, as *meleagris*, by reason of its exceptional female genitalia, stands apart from all other Caribbean *Colpoptera*. Speculation about its origin, however, must await knowledge of the corresponding species in Guadeloupe and Martinique, which lie to the north and south, respectively, of Dominica.

Colpoptera thyone, new species

FIGURE 2,j-l

Testaceous; frons with a cloud in middle of disc and at base, and sublateral margin interruptedly, fuscous; clypeus basally testaceous, distally fuscous-piceous; vertex infuscate except in middle line and in middle of each compartment; antennae fuscous; pronotum infuscate on anterior part of disc and behind eyes, infuscate areas maculate with testaceous; mesonotum with disc (except in middle line), a triangular area near each lateral angle, and a pair of wedge-shaped markings just anterior to disc fuscous; abdominal tergites and ster-

nites, except for a median linear spot posteriorly on latter, brown or fuscous; anal segment castaneous-piceous, genital styles ventrally light fuscous. Tegmina subhyaline, corium and membrane castaneous-fuscous except at base, and a large hyaline spot on costal margin one quarter from base, and a narrower and more elongate area in region of node; clavus lightly marbled with yellowish fuscous. Wings lightly and uniformly infusate.

Anal segment of male rather short, anal foramen situated about one-third from base, apical margin convex; anal segment in profile weakly declivous distad of anal foramen, lower margin concave, lateroapical angles broadly and strongly produced ventrad, acute at tip. Pygofer with dorsal angles roundly produced. Aedeagus long, tubular, curved upwards distally, a narrow subvertical lobe on dorsal surface at base near point of suspension; a pair of moderately long straight spines arising laterodorsally near apex, each with a minute spine dorsally at its base, directed cephalad and lying close against aedeagus. Genital styles subtriangular, ventral margin straight, dorsal margin ascending straight from base to near middle, then abruptly descending to base of dorsal process; apical margin deeply convex, dorsal process relatively short and stout, shortly bifurcate distally with the anterior limb directed dorsad and the posterior laterad.

Anal segment of female moderately long, apical margin transverse. Third valvulae of ovipositor broadly triangular, narrowing distad, apical margin unpigmented, tumid, and membranous. Pregenital sternite with posterior margin transverse, a very short and broad unpigmented setigerous eminence at middle.

Male, length 3.3 mm., tegmen 4.3 mm. Female, length 5.0 mm., tegmen 5.3 mm.

Specimens examined: 26 males, 30 females, and 4 nymphs, mostly taken on *Lantana* sp., Soufriere, St. Lucia, B. W. I., Feb. 25, 1941, Fennah. Holotype male, allotype female, USNM 62016.

This species is distinguished readily by the bold color pattern and by the shape of the male and female genitalia.

Coloptera maculifrons Muir

Coloptera maculifrons Muir, Proc. Hawaiian Ent. Soc., vol. 5, p. 466, 1924.

Coloptera maculifrons dominicana, new subspecies

FIGURE 1, a-e

Brown; frons slightly paler except for a faint transverse bar in basal third; clypeus distally, disc of mesonotum, and a lozenge-shaped mark near each lateral angle piceous; pronotum infusate with testaceous mottling. Tegmina light brown, moderately translucent

near base; distal two-thirds of corium and marginal area of clavus dark fuscous, membrane brown. Wings suffused with brown.

Anal segment of male narrow, moderately long, slightly declivous distad of anal foramen, which is situated about one-third from base and slightly decurved at tip. Aedeagus tubular, weakly curved upward distally, an unequally bifurcate process arising laterally close to apex, directed cephalad, the shorter limb above the longer; a pair of stout spinose processes arising ventrally in apical quarter, each process directed cephalad, lying close to aedeagus, and curved dorsad at its tip; processes of equal length or one process longer than the other, the longer sometimes on left, sometimes on right. Genital styles broadly rounded-triangular, in profile with ventral and dorsal margins straight, apical margin deeply rounded, dorsal process vertical, porrect, distally attenuated, dilated into a small lobe at apex.

Anal segment of female long, decurved distad of anal foramen, which is situated one-third from base. Third valvulae broadly triangular with distal margin unpigmented, slightly tumid. Pregenital sternite strongly produced ventrocaudad, produced portion in anteroventral view almost semicircularly rounded.

Male, length 5.2 mm., tegmen 6.5 mm. Female, length 5.0 mm., tegmen 6.8 mm.

Specimens examined: 17 males, 19 females, and 8 nymphs, Ridgefield, Dominica, B. W. I., July 18, 1940, Fennah (subspecific holotype male, allotype female, USNM 62011).

This subspecies is distinguished from the typical subspecies (of which the holotype is figured for comparison) in the shape of the frons and of the apical margin of the tegmina, as well as in tegminal proportions. There is excellent agreement in the forms of both the male and female genitalia between the present subspecies and the typical subspecies, and it is on this account that the writer feels compelled to assess the differences as being of subspecific value.

Coloptera maculifrons angustior, new subspecies

FIGURE 1, f-h

Closely similar to typical subspecies in size, shape of head and of tegmina, and in shape of male and female genitalia.

Frons uniformly pale testaceous or stramineous with a moderately broad transverse band along basal margin piceous; color of body otherwise as in typical subspecies. Tegmina brown, subopaque, longitudinal veins of corium concolorous or slightly darker than ground color, transverse veinlets concolorous with ground; membrane sepia brown, or a little lighter, with venation pale.

Specimens examined: 8 males and 4 females, Christian Valley, Antigua, B. W. I., August 1943, Fennah (subspecific holotype male, allotype female, USNM 62012); 9 males and 3 females from Nevis, B. W. I., Jan. 16, 1942, Fennah; 2 males and 2 nymphs, St. Kitts, B. W. I., Jan. 23, 1942, Fennah; 1 male and 1 female from forest in the Central Hills, Montserrat, B. W. I., May 21, 1941, Fennah (marked as in the Nevis subspecies); 1 female, Constitution Hill, Christiansted, St. Croix, Virgin Islands, April 1936, H. A. Beatty.

The material from Nevis is generally similar to that from Antigua, but differs in that the mesonotal carinae and lateral areas together with two small spots at the hind margin of the disc are pallid, not uniformly infusate; also, the areas between the pustules on the base of the frons are slightly infumed, so that in the basal part of the frons the pustules are plainly visible.

The specimen from St. Croix is smaller than the Antiguan specimens and the markings are bolder, but otherwise is very close to them in general appearance.

Colpoptera maculifrons grenadana, new subspecies

FIGURE 1, f, j, i

Coloring very similar to Antiguan population of *C. maculifrons angustior*, new subspecies. Tegmina with apical margin straight or very shallowly sinuate, anal angle obtusely rounded; angle formed by projecting apical and sutural margins of membrane slightly obtuse.

Specimens examined: 2 males, 10 females, and 7 nymphs from Mardi Gras, Grenada, Oct. 20, 1943, Fennah (subspecific holotype male, allotype female, USNM 62013).

This population is undoubtedly nearest to *C. maculifrons dominicana*, new subspecies, but the shape of the apical margin of the tegmina creates a superficial resemblance to *C. maculifrons angustior*. The most obvious difference lies in the shape of the anal angle of the tegmina; in the Grenadan subspecies this is definitely obtuse, whereas in *C. maculifrons angustior* it is slightly acute. In the aedeagus the laterodorsal processes are rather longer than in the Leeward Island subspecies.

The nymphs of *C. maculifrons* are, for an issid, most unusual in their coloration. They are pure white, with the apex and base of the frons piceous; a broad, yellowish brown band extends from behind the eyes along the sides of the body to the apex of the abdomen, its inner margin being dark brown. This band, when overlaid with wax, appears dark reddish mauve. As in other nymphs of this genus, a long tuft of stiff, porrect bristles of wax is developed on the ceriferous plates at the apex of the abdomen. Like the adults, the nymphs feed on the unhardened apical stems of dicotyledonous woody perennials, but sometimes also feed below leaves on the midrib.

Colpoptera elevans (Walker)FIGURE 2, *o-s*

Poeciloptera elevans Walker, List of the . . . homopterous insects in the . . . British Museum, suppl., p. 335, 1858.

Colpoptera rugosa Van Duzee, Bull. Buffalo Soc. Nat. Sci., vol. 8, No. 5, p. 36, 1907.

Specimens examined: 2 males, 4 females, and 2 nymphs from Mona, Jamaica, B. W. I., Nov. 1940, Fennah.

This species differs from those from the eastern Caribbean area in the shape of the pregenital sternite of the female and of the lateral margin of the pygofer, which is narrowly produced caudad at middle in a slender process, rounded at its apex.

Colpoptera chrysops, new speciesFIGURE 1, *k-o*

Testaceous or light fuscous; apical half of vertex, frons, genae, and basal two-thirds of clypeus pale yellow, basal part of vertex and lateral margins, sides of head immediately below eyes, and clypeus distally fuscous-piceous; pronotum, tegulae, at least posterior margin of mesonotum, and abdominal sclerites fuscous.

Tegmina subhyaline, castaneous-fuscous at base; distad of this, costal cells to level of apex of Sc, and cells of Sc as far as level of node hyaline, corium otherwise fuscous, clavus distinctly lighter and with a yellowish tinge, this coloration extending a little into membrane distad of claval apex; membrane, except as otherwise stated, fuscous. Wings infusate, paler toward base, veins fuscous.

Anal segment of male moderately short, anal foramen situated one-third from base, distal portion flattened with lateral margins slightly elevated, apical margin transverse; in profile anal segment rather narrow, declivous and almost straight distad of anal foramen, lower lateral margins produced ventrad just distad of middle in a triangular lobe. Pygofer with dorsal angles rounded-subrectangulate, not prominent, a straight, tapering process, apically acute, arising at middle of hind margin and directed caudad. Aedeagus moderately long, subtubular, shallowly curved upward, bilaterally symmetrical; four spines arising dorsolaterally near apex, three horizontal, directed cephalad, and one subvertical; lowest member of the horizontal spines straight, tapering distally, the second shorter, curved dorsad distally, the third much shorter than second and sinuate; the subvertical spine shorter than all these, directed dorsomesad. Genital styles subtriangular, lower margin almost straight, apical margin very shallowly convex, dorsal margin ascending to middle, then descending to base of apical process, which is short, directed dorsad, flattened into an ovate disc on outer surface, and acute at apex.

Male, length 5.2 mm., tegmen 6.3 mm.

Specimen examined: Holotype male, Cinchona, Jamaica, July 25, 1924, C. C. Gowdey (USNM 62056).

This species resembles *C. elevans* (Walker) in general build of body and gross structure of male genitalia, and is undoubtedly closely related to it. It differs in the coloration of the head and tegmina and in the shape of the processes of the aedeagus.

Genus *Thionia* Stål

Thionia Stål, Berliner Ent. Zeitschr., vol. 3, p. 321, 1859 (logotype, *Issus longipennis* Spinola, Ann. Soc. Ent. France, vol. 8, p. 348, 1839; designated by Schmidt, Stettiner Ent. Zeit., vol. 71, p. 189, 1910).

Subgenus *Cheiloceps* Uhler

Cheiloceps Uhler, Proc. Zool. Soc. London, 1895, p. 68. (Haplotype, *Cheiloceps musca* Uhler, loc. cit.).

This subgenus is distinguished from the typical subgenus by the shape of the ovipositor, which is relatively elongate strongly tapering distad, decurved, and acute at apex. In the typical subgenus the ovipositor is short and concealed by the short, convexly subquadrate third valvulae.

Thionia (Cheiloceps) musca Uhler

FIGURE 4,a-e

Cheiloceps musca Uhler, Proc. Zool. Soc. London, 1895, p. 68.

The figure of the male genitalia was kindly prepared by Dr. W. E. China from a male cotype in the British Museum (Natural History) which is here designated as the holotype. The remaining figures are of a female cotype in the U. S. National Museum which is here designated as the allotype. The typical pair was the only material available for study from St. Vincent.

Thionia (Cheiloceps) musca grenadana, new subspecies

FIGURE 4,f,g

Closely similar in external characters to the typical subspecies.

Anal segment of male with lateral margins at middle produced ventrad in a broader lobe. Aedeagus in profile acute apically, a long spinose process arising laterally approximately one-quarter from apex, directed laterad for half its length and slightly curved, then abruptly bent upward and continued straight to acuminate apex.

Male, length 3.8 mm., tegmen 3.1 mm. Female, length 3.8 mm., tegmen 3.8 mm.

Specimens examined: Subspecific holotype male, allotype female, and 2 nymphs, Grenada, B. W. I., Oct. 20, 1943, Fennah (USNM 62057).

This subspecies differs from the typical subspecies in the broader lateral lobe of the anal segment of the male and in the acute apex of the aedeagus in profile. The coloring is closely similar, though the frons of the female is less infuscate than that of the allotype of *T. musca musca* Uhler.

Thionia (Cheiloceps) clusiae, new species

FIGURE 3,a-d

Of the same bodily shape and proportions as *T. musca* Uhler.

Stramineous; median carina of frons, lateral carinae of vertex, and anterior margin of mesonotum sometimes tinged orange; an ovate spot behind eyes and a smaller spot anteriorly lateral of pronotal disc fuscous. Tegmina subhyaline, tinged yellowish, in male very lightly infuscate distally in areas between veinlets, in female more distinctly infuscate between R and first claval vein; distal transverse veinlets frequently pallid.

Anal segment of male short, rhombic, anal foramen situated slightly basad of middle, sides converging distally to subacute apex, in profile both upper and lower margin very distinctly sinuate, apex acute. Pygofer rather short with laterodorsal angles obtuse, not prominent, lateral margins produced caudad at middle in an obtusely angulate lobe. Aedeagus tubular, shallowly curved upward distally, in profile narrowest at middle, dorsoapically membranous, devoid of processes; a broad falcate lobe, sclerotized on its posterior margin, between pygofer and base of anal segment on each side. Genital styles broad, expanding distally, ventral margin straight, dorsal margin slightly convex, apical process broad, distally acute with a short thin ledge extending laterad from its anterior margin near base.

Female genitalia as in *T. musca* Uhler.

Male, length 6.2 mm., tegmen 4.5 mm. Female, length 7.9 mm., tegmen, 5.5 mm.

Specimens examined: 35 males, 43 females, and 18 nymphs on *Clusia* sp. near active solfatara, Soufriere, St. Lucia, B. W. I., Mar. 22, 1939, Fennah (holotype male, allotype female, USNM 62009).

This species is distinguished from *T. musca* by tegminal coloration and by the shape of the male anal segment and aedeagus, as well as by the absence of aedeagal processes. In general this species is rarely encountered, but in the small enclave mentioned was observed to maintain a relatively high population over a period of eight years, when the opportunity for further observation ended.

Thionia (Cheiloceps) medusa, new species

FIGURE 3,e-h

Of same bodily shape and proportions as *T. musca* Uhler.

Light brown, speckled testaceous; frons sublaterally infuscate with pustules testaceous; a small triangle on each side of middle line at

base, a large ovate spot on each side of pronotum behind eye, a mark on dorsal callus behind eyes, and a spot on anterior face of pronotum laterad of disc piceous, the last mark more or less concealed by hind margin of head; a spot on mesothorax below base of tegmina and a small spot near base of mesocoxae fuscous; a narrow line on outside of pronotal spot white. Tegmina subhyaline with a sordid yellow tinge; cells at apical margin in M and Cu₁ infusate. Wings hyaline, faintly tinged brown, with brown veins.

Anal segment of male elongate-rhombic, anal foramen situated slightly basad of middle, lateral margins tapering from this level to deeply rounded apex; in profile porrect caudad, with lower lateral margin straight or nearly so. Pygofer with laterodorsal angles obtusely rounded, not at all prominent, lateral margins shallowly convex, devoid of processes. Aedeagus tubular, curved upward distally, lateral dorsal margins diverging basad; in profile with a broad and rather long flattened process on each side, closely adpressed to aedeagus, directed ventrocephalad and abruptly narrowed distally into a sinuate spine; these processes in ventral view gradually converging cephalad, but abruptly bent laterocephalad near apex. Genital styles subtriangular, expanding distally, ventral margin feebly convex, dorsal margin straight, ascending to dorsal process, apical margin straight, oblique; dorsal process subtriangular in side view, with a short horizontal lamina arising on outer surface near base, apically bent dorsocephalad in a curved spine.

Female genitalia as in *T. musca*. Pregenital sternite broadly excavate on hind margin, but medially slightly produced dorsocaudad in a short convex lobe.

Male, length 5.8 mm., tegmen 4.5 mm. Female, length 5.6 mm., tegmen 6.5 mm.

Specimens examined: 17 males and 20 females, 1,000 ft. in mountain forest near the Imperial Road, Dominica, B. W. I., June 11-30, 1939, June 15-29, 1940, Fennah (holotype male, allotype female, USNM 62010).

This species differs from *T. musca* in markings, and from this and all other described species in the shape of the male and female genitalia. It resembles *T. borinquensis* Dozier in the presence of a piceous pronotal spot and in the shape of the anal segment of the male, but differs strongly in the position and shape of the aedeagal spines.

Thionia (Cheiloceps) laodice, new species

FIGURES 3, *i-m*; 5, *v*

Of same size and bodily proportions as *T. musca* Uhler.

Vertex as broad as long.

Light yellowish brown, obscurely speckled testaceous; two small triangular areas at base of frons and a small spot behind each eye

castaneous. Tegmina hyaline, tinged sordid yellow, two spots at apical margin in M and Cu fuscous.

Anal segment of male as in *T. medusa*, new species, but with lower lateral margin distinctly more sinuate. Pygofer as in *T. medusa*. Aedeagus tubular, curved upward distally, in profile with a rather long and narrow process on each side, closely adpressed to aedeagus, directed cephalad and curved dorsad distally, abruptly narrowed into a sinuate spine apically and recurved cephalad. Genital styles subtriangular in profile, expanding distad, ventral, apical and dorsal margins almost straight, dorsal process subtriangular, a short subhorizontal flange externally near base, apex rather broadly lobate and twisted so that apical margin is at right angles to axis of body.

Female genitalia as in *T. musca* Uhler. Pregenital sternite very shallowly excavate in median portion.

Specimens examined: 5 males and 7 females, Chance's Mountain, Montserrat, B. W. I., Jan. 18, 1939, Fennah (holotype male, allotype female, USNM 62008).

This species superficially resembles *T. medusa* but differs in the shape and direction of the aedeagal processes, which distally overlie the aedeagus, whereas they underlie it in *T. medusa*; it differs also in the shape of the dorsal process of the genital styles, which is acuminate in *T. medusa*, however viewed, but broad and rounded distally in posterior view in the present species. From *T. musca* it differs in these characters and also in the relatively wider vertex. Of the Greater Antillean species the closest appears to be *T. borinquensis* Dozier, which is of a much darker hue, and differs strongly in the shape and direction of the lateral processes of the aedeagus and in the shape of the dorsal process of the genital styles.

Thionia brevior Fowler

FIGURE 4, h-j

Thionia brevior Fowler in Godman and Salvin, *Biologia Centrali-Americana*, Rhynchota, Homoptera, vol. 2, pt. 1, p. 123, 1904.

This species does not occur in the Lesser Antilles, nor, as far as known, anywhere in the West Indies, but the opportunity is taken to publish figures prepared from the type material by Dr. W. E. China for comparison with the preceding species.

Genus *Acanalonia* Spinola

Acanalonia Spinola, *Ann. Soc. Ent. France*, ser. 1, vol. 8, p. 447, 1839 (haplotype, *Acanalonia servillei* Spinola, loc. cit., p. 448).

Acanalonia robusta (Walker)

FIGURE 5, m-r

Poeciloptera robusta Walker, *List of the . . . homopterous insects in the . . . British Museum*, vol. 2, p. 449, 1851.

Acanalonia servillei Van Duzee, *Bull. Buffalo Soc. Nat. Sci.*, vol. 8, No. 5, p. 38, 1907.

Specimens examined: 1 male, 2 females, and 3 nymphs from Mona, Jamaica, Nov. 1940, Fennah. The figures are of this male. The holotype of the species is female.

Acanalonia plana (Van Duzee)

FIGURE 5, *j-l*

Amphiscepa plana Van Duzee, Bull. Buffalo Soc. Nat. Sci., vol. 8, No. 5, p. 37, 1907.

Specimens examined: 1 male and 3 females taken on logwood, Mona, Jamaica, Nov. 1940, Fennah.

Acanalonia viriditerminata (Lethierry)

FIGURE 5, *a-f*

Carthaea viriditerminata Lethierry, Ann. Soc. Ent. Belgique, vol. 25, p. 14, 1881.
Carthaea simillima Lethierry, loc. cit., p. 15.

Specimen examined: 1 male from Guadeloupe, West Indies (the type locality), July, A. Busck. The figures are of this specimen.

Acanalonia viriditerminata sylvestris, new subspecies

FIGURE 5, *i*

Size and proportions as in typical subspecies, but head more distinctly acute at extreme apex. Coloration in life sometimes jade green with only humeral callus piceous, sometimes yellowish green with fuscous spots as figured.

Male genitalia as in typical subspecies, but apex of inner pair of aedeagal processes blunt, and gradually bent laterad distally; apex of short secondary process on each of the long ventral processes evenly rounded at tip, not at all dilated.

Specimens examined: 5 males, 9 females, and 2 nymphs, 800 ft. in forest, Chance's Mountain, Montserrat, B. W. I., Jan. 18, 1939, Fennah (subspecific holotype male, allotype female, USNM 62005). Also, 1 female and 4 nymphs, Ottley's Level, St. Kitts, B. W. I., Jan. 23, 1942, Fennah; assigned to this subspecies but in the absence of male material.

This subspecies differs from the typical subspecies in the vertex in dorsal view being more distinctly acute at the apex and not merely deeply rounded, in the inner processes of the aedeagus being blunt apically, not acuminate, and in the rounded, not obliquely truncate apex of the short vertical processes that arise near the middle of the long ventral processes.

Acanalonia viriditerminata muscosa, new subspecies

FIGURE 5,g,h

Size and proportions, including shape of vertex, as in typical subspecies.

Yellowish green in life; a spot anteriorly on pronotum above eyes piceous; basal part of frons, sides of head, vertex, pronotal and mesonotal discs ferruginous speckled testaceous or green. Tegmina yellowish green, humeral callus, four or five spots in an oblique line distally, a narrow submarginal line apically, interrupted by veins, and posterior margin of clavus interruptedly fuscous.

Genitalia as in typical subspecies, but apex of inner pair of processes blunt and distinctly curved laterad at tip, and the short appendage of each of the long processes abruptly dilated at apex and obliquely truncate.

Specimens examined: 21 males, 28 females, and 65 nymphs, 1,000–1,200 ft. in mountain forest near Imperial Road, Dominica, B. W. I., June, July 1940, Fennah (subspecific holotype male, allotype female, USNM 62004).

This subspecies is distinguished by the dilated apices of the secondary processes of the ventral aedeagal spines.

Acanalonia bonducellae, new species

FIGURE 4,k-n

Vertex about 2.4 times as broad as long in middle line, scarcely longer in middle line than at sides, declivous, rounding into frons; frons broader than long, feebly tricarinate. Tegmina with apical and anal angles rounded. Posttibiae apically 8-spined, basal metatarsal joint 10-spined.

Jade green; a small spot on each side near base of lateral carinae of pronotal disc piceous; protibiae and mesotibiae subferruginous, speckled with testaceous spots.

Anal segment of male moderately long, anal foramen slightly distad of middle, apical margin deeply rounded. Pygofer rather long, laterodorsal angles strongly produced in a narrowly triangular process acuminate at tip, lateral margins strongly oblique. Aedeagus with inner process blunt at apex, distally directed ventrocaudad and slightly mesad; the long apical pair of processes recurved below aedeagus and directed cephalad, devoid of secondary appendages and narrow but not acuminate at tip. Genital styles subtriangular, ventral margin in profile slightly sinuate, deeply rounded apically, dorsal margin ascending concavely from base to dorsal process, apical margin very oblique, straight, dorsal process obliquely truncate apically, sclerotized along distal margin, acute at apex.

Pregenital sternite of female very shallowly convexly produced on posterior margin.

Male, length 7.6 mm., tegmen 7.6 mm. Female, length 8.5 mm., tegmen 10.0 mm.

Specimens examined: Holotype male, allotype female (USNM 62007), and 78 males and 88 females on "roucou" (*Caesalpinia bonducella*) in a gully near Plymouth, Montserrat, B. W. I., Jan. 17, 1939, Fennah. A single female from St. Kitts, Jan. 23, 1942, Fennah, also is assigned to this species.

This species is distinguished by the strongly produced laterodorsal angles of the pygofer and by the shape of the processes of the aedeagus.

Acanalonia hewanorrae, new species

[FIGURE 5, s-u

Of same form, size, and color as *A. bonducellae*, new species. Post-tibiae apically 6 to 8 spined, basal metatarsal joint 9-spined.

Anal segment of male moderately long, anal foramen situated slightly distad of middle, apical margin rather broadly rounded. Pygofer with laterodorsal angles bluntly rectangulate, not produced, lateral margins vertical, not oblique. Aedeagus of same form as in *A. bonducellae*, inner pair of processes distally decurved and acuminate; apical processes reflected below aedeagus, devoid of secondary appendages, and acuminate at apex. Genital styles of same form as in *A. bonducellae*.

Pregenital sternite of female produced caudad at middle in a semi-circular lobe, margin distinctly excavate on each side of this lobe.

Specimens examined: Holotype male, allotype female (USNM 62006), and 12 males, 13 females, and 9 nymphs from St. Lucia, B. W. I., Nov. 30, 1938, Fennah. Also assigned to this species are 3 males, 1 female, and 1 nymph from Kingstown, St. Vincent, B. W. I., Mar. 31, 1941, Fennah, and 1 male from Mardi Gras, Grenada, B. W. I., Oct. 30, 1943, Fennah.

This species differs from *A. bonducellae*, which it generally resembles, in the shape of the pygofer, the acuminate apex of all the aedeagal processes, and, in the female, in the shape of the pregenital sternite.

The close agreement in the shape of the anal segment of the male and of the genital styles raises the question whether this species is not perhaps better regarded as a subspecies of *A. bonducellae*. With the material available, recognition of *A. hewanorrae* as a full species appears to be the better interpretation of the data, but if intermediate forms should be found in Martinique, Dominica, and Guadeloupe, the St. Lucian form may have to be reduced in status.

Acanalonia theobromae Fennah

FIGURE 4,0-q

Acanalonia theobromae Fennah, Proc. U. S. Nat. Mus., vol. 95, p. 503, 1945.

Aedeagus with a median spine directed caudad between inner pair of processes, the latter decurved and acuminate at tip, apical processes reflected below aedeagus, acuminate at tip and slightly deflexed, a short secondary process at middle, directed mesad, slightly curved, blunt at apex.

This species was compared in the original description with the Central American species *A. decens* Stål. An additional point in which the two species differ is in the spinose armature of the hind legs. *A. theobromae* has eight spines at the apex of the posttibiae (occasionally seven on one leg), and eight or nine spines on the basal metatarsal joint. The posttibiae of *A. decens* each bear seven spines apically, while the basal metatarsal joint bears six.

EXPLANATION OF FIGURES

FIGURE 1

- Colpoptera maculifrons dominicana*, new subspecies, *a-e*: *a*, frons and clypeus; *b*, vertex and pronotum; *c*, head in profile; *d*, tegmen; *e*, aedeagus, left side.
- Colpoptera maculifrons angustior*, new subspecies, *f-h*: *f*, side view, tegmen in solid line; *g*, frons and clypeus; *h*, pregenital sternite of female, ventral view.
- Colpoptera maculifrons grenadana*, new subspecies, *f, i-j*: *f*, side view, tegmen in broken line distally; *i*, frons and clypeus; *j*, pregenital sternite of female, ventral view.
- Colpoptera chrysops*, new species *k-o*: *k*, vertex and pronotum; *l*, frons and clypeus; *m*, tegmen; *n*, anal segment, pygofer and genital style, left side; *o*, aedeagus, left side.
- Colpoptera meleagris*, new species, *p-v*: *p*, vertex and pronotum; *q*, frons and clypeus; *r*, tegmen; *s*, aedeagus, right side; *t*, pygofer and anal segment, right side; *u*, genital style, right side; *v*, pregenital sternite of female.
- Colpoptera cyatheae*, new species, *w-y*: *w*, tegmen; *x*, posterior margin of pregenital sternite of female; *y*, anal segment and terminal sclerites of female, right side.

FIGURE 2

- Colpoptera memnonia*, new species, *a-i*: *a*, frons and clypeus; *b*, vertex and pronotum; *c*, tegmen; *d*, anal segment of male and pygofer, side view; *e*, aedeagus, right side; *f*, distal process of aedeagus, detached and enlarged, posterior view; *g*, genital style, right side; *h*, anal segment and terminal sclerites of female, right side; *i*, posterior margin of pregenital sternite of female.
- Colpoptera thylene*, new species, *j-l*: *j*, anal segment, pygofer and genital style, left side; *k*, aedeagus, left side; *l*, posterior margin of pregenital sternite of female.
- Colpoptera lucaris*, new species, *m,n*: *m*, anal segment, pygofer and genital style, left side; *n*, aedeagus, left side.
- Colpoptera elevans* Walker, *o-s*: *o*, frons and clypeus; *p*, tegmen; *q*, anal segment, pygofer and genital style; *r*, aedeagus, left side; *s*, aedeagus, right side.
- Colpoptera maculifrons maculifrons* Muir, *t-w*: *t*, frons and clypeus; *u*, vertex and pronotum; *v*, head, left side; *w*, tegmen.

FIGURE 3

- Thionia clusiae*, new species, *a-d*: *a*, vertex, pronotum and mesonotum; *b*, anal segment, hind margin of pygofer, left side; *c*, genital style, left side; *d*, aedeagus, left side.
- Thionia medusa*, new species, *e-h*: *e*, vertex, pronotum and mesonotum; *f*, anal segment, hind margin of pygofer and genital style, left side; *g*, aedeagus, left side; *h*, posterior margin of pregenital sternite of female.
- Thionia laodice*, new species, *i-m*: *i*, vertex, pronotum and mesonotum; *j*, anal segment, hind margin of pygofer and genital style, left side; *k*, aedeagus, left side; *l*, dorsal view of spine of right side; *m*, medium portion of posterior margin of pregenital sternite.
- Colpoptera cyatheae*, new species, *n-r*: *n*, vertex and pronotum; *o*, frons and clypeus; *p*, anal segment and hind margin of pygofer, right side; *q*, aedeagus, right side; *r*, anal segment, right side.

FIGURE 4

- Thionia (Cheiloceps) musca musca* (Uhler), *a-e*: *a*, frons and clypeus (allotype); *b*, vertex and pronotum (allotype); *c*, tegmen, (allotype); *d*, wing, (allotype); *e*, male genitalia, left side (holotype).
- Thionia (Cheiloceps) musca grenadana*, new subspecies, *f, g*: *f*, male genitalia, left side; *g*, aedeagus, left side.
- Thionia brevior* Fowler (holotype), *h-j*: *h*, vertex and pronotum; *i*, aedeagus, right side; *j*, genital style, left side.
- Acanalonia bonducellae*, new species, *k-n*: *k*, vertex and pronotum; *l*, anal segment, posterior margin of pygofer and genital style, left side; *m*, aedeagus, left side; *n*, posterior margin of pregenital sternite of female.
- Acanalonia theobromae* Fennah, *o-q*: *o*, aedeagus, left side; *p*, anal segment, lateral margin of pygofer and genital style, left side; *q*, posterior margin of pregenital sternite of female.

FIGURE 5

- Acanalonia viriditerminata viriditerminata* (Lethierry), *a-f*: *a*, side view, legs omitted; *b*, vertex and pronotum; *c*, pygofer, anal segment and genital style, left side; *d*, aedeagus, left side; *e*, apical portion of left lateroventral process of aedeagus; *f*, apical portion of lateral appendage of left distal process of aedeagus.
- Acanalonia viriditerminata muscosa*, new subspecies, *g, h*: *g*, apical portion of left lateroventral process of aedeagus; *h*, apical portion of lateral appendage of left distal process of aedeagus.
- Acanalonia viriditerminata sylvestris*, new subspecies: *i*, apical portion of left lateroventral process of aedeagus.
- Acanalonia plana* (Van Duzee), *j-l*: *j*, side view, rostrum and legs omitted; *k*, aedeagus, left side; *l*, anal segment, posterior margin of pygofer and genital style, left side.
- Acanalonia robusta* (Walker), *m-r*: *m*, head and pronotum in profile; *n*, anal segment of male, lateral margin of pygofer, and genital style, left side; *o*, aedeagus, left side; *p*, apical portion of lateral appendage of left distal process of aedeagus; *q*, diagrammatic transverse section of dorsal surface of aedeagus; *r*, posterior margin of pregenital sternite of female.
- Acanalonia hewanorrae*, new species, *s-u*: *s*, body, left side, legs omitted; *t*, anal segment, lateral margin of pygofer, aedeagus and genital style, left side; *u*, median portion of posterior margin of pregenital sternite of female.
- Thionia laodice*, new species: *v*, anal segment of male, dorsal view.

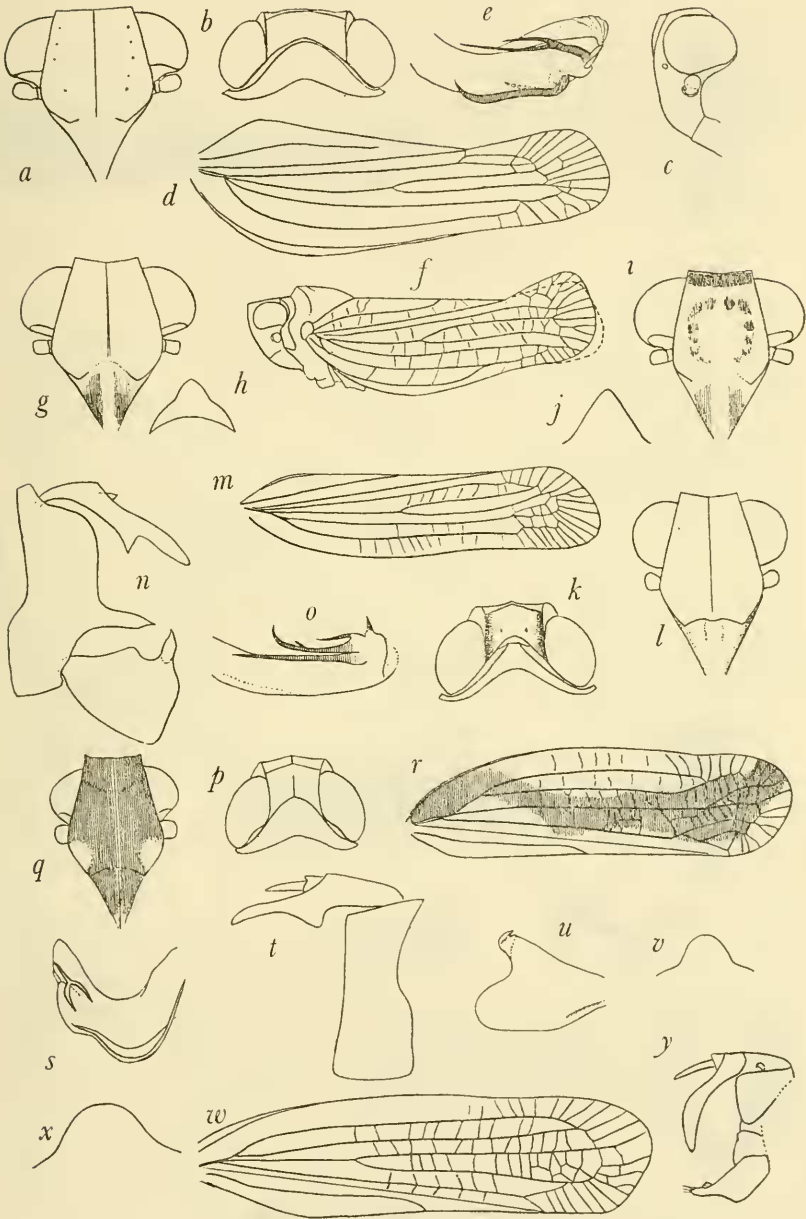


Figure 1.—For explanation see page 41.

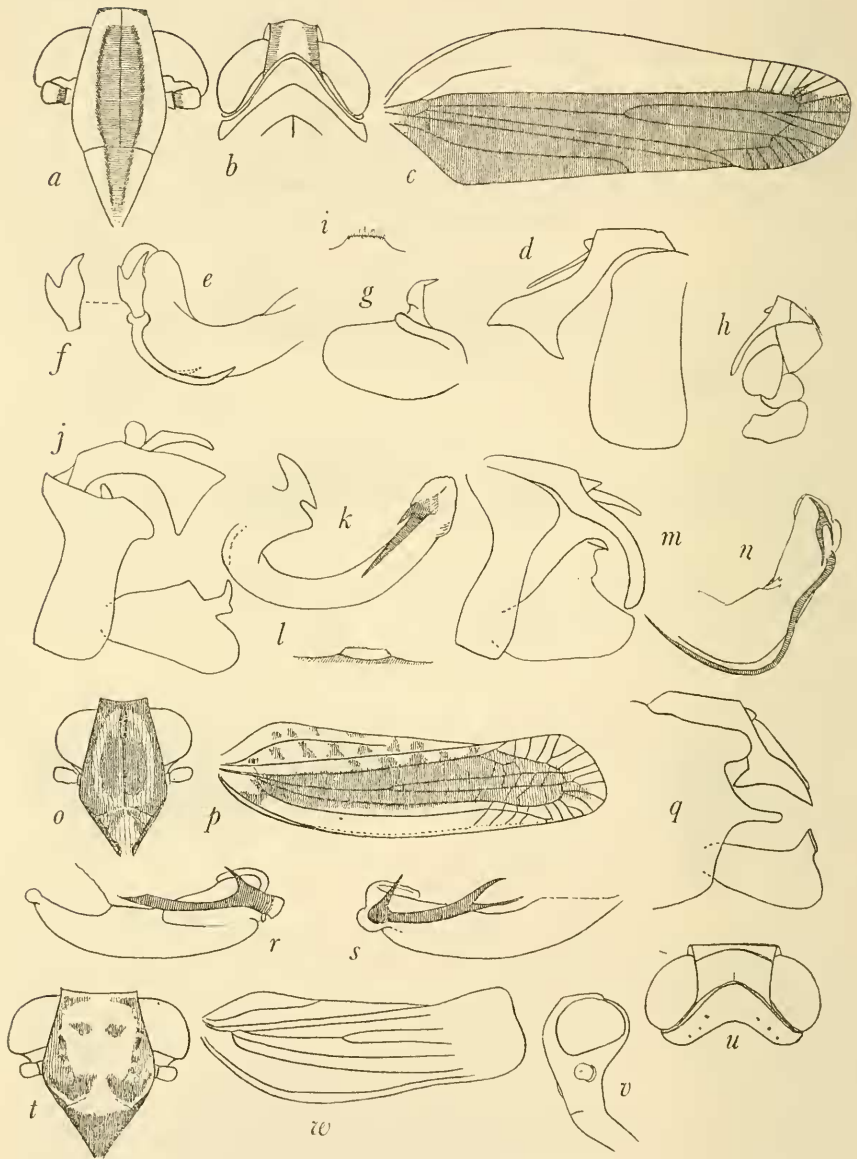


Figure 2.—For explanation see page 41.

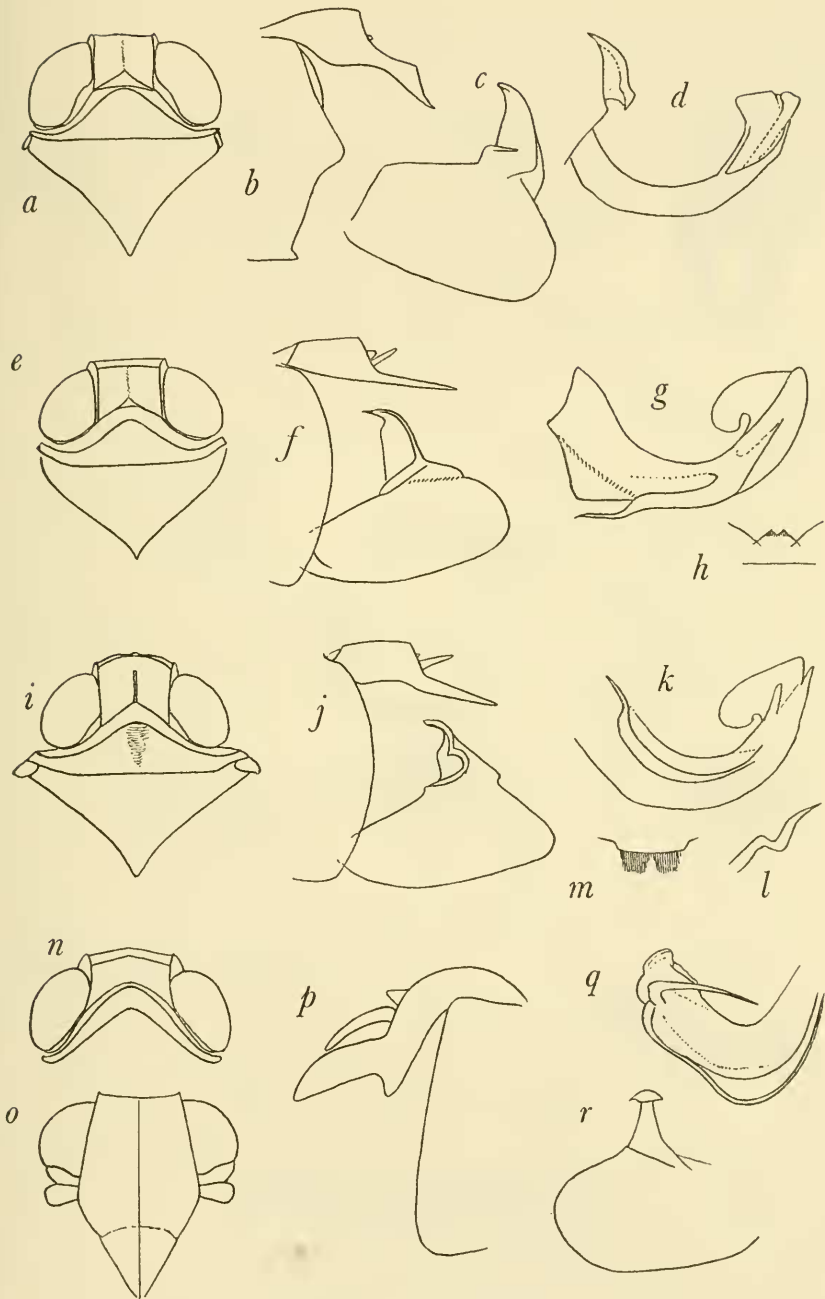


Figure 3.—For explanation see page 42.

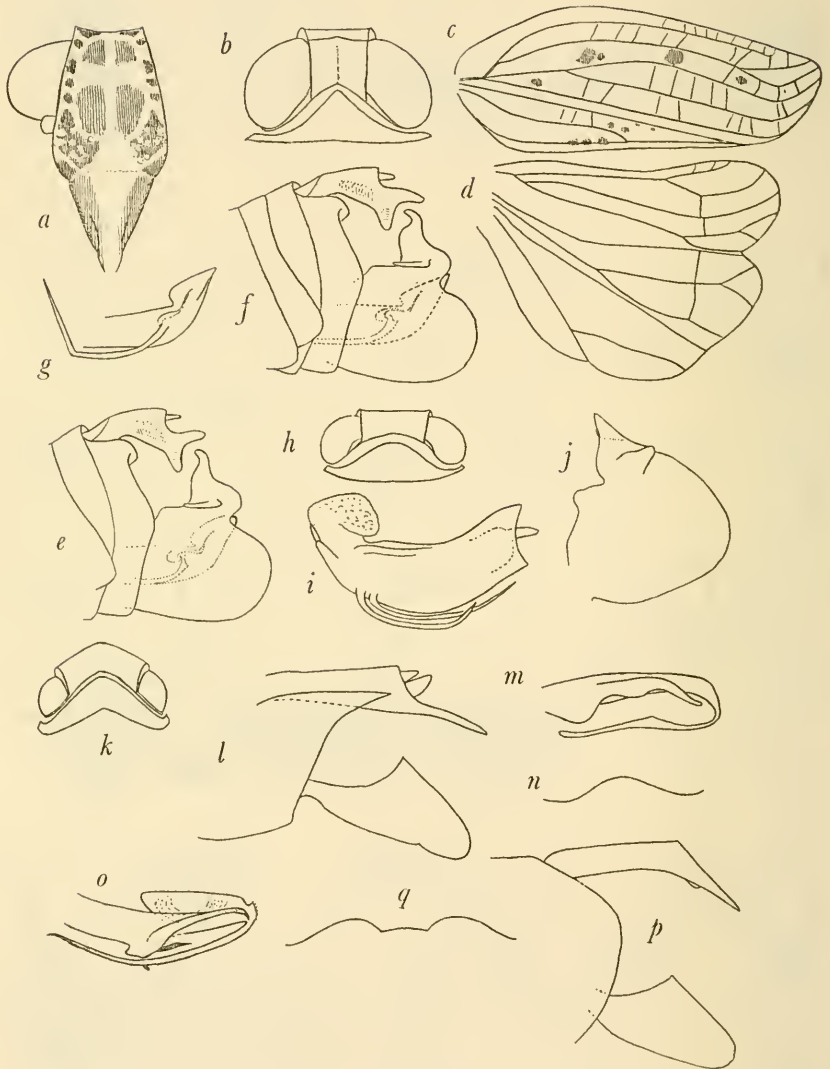


Figure 4.—For explanation see page 42.

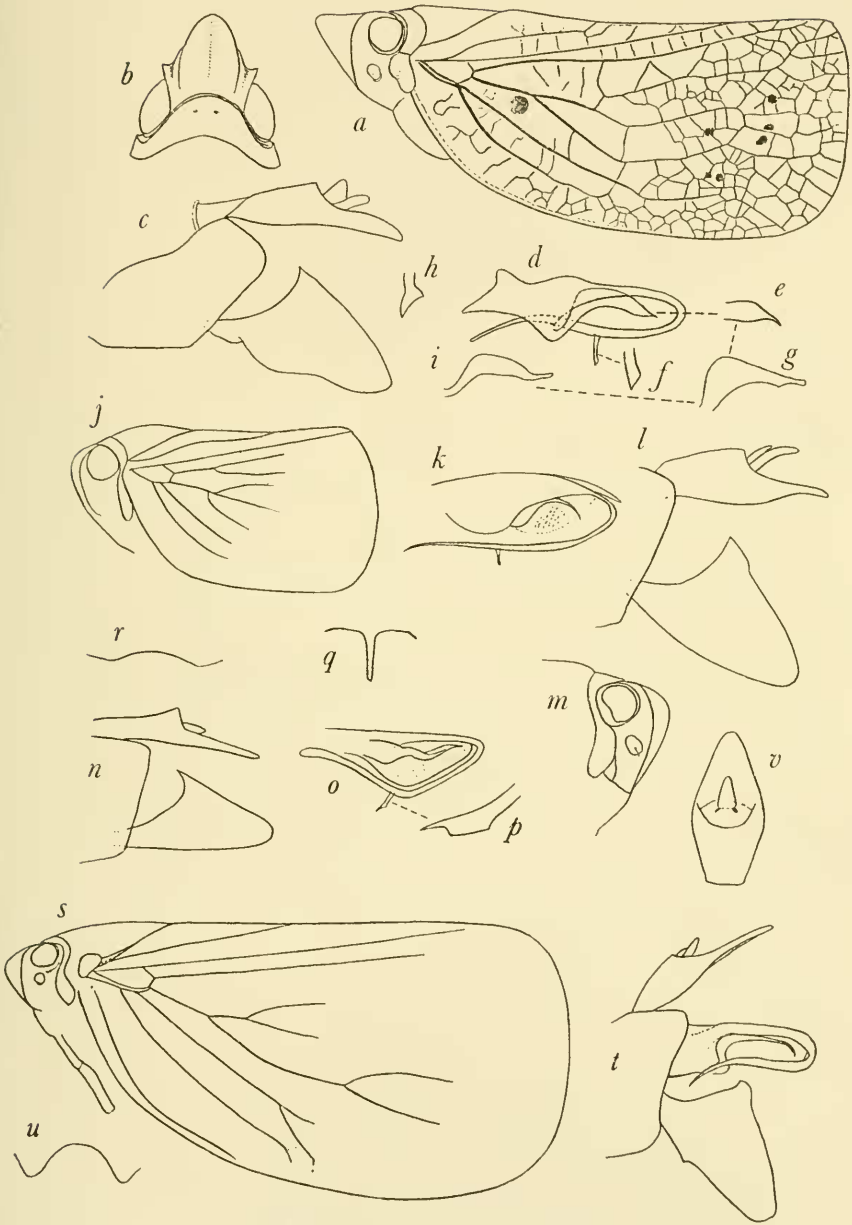


Figure 5.—For explanation see page 42.